AMENDMENTS TO THE CLAIMS

The following listing of claims replaces all prior listings, and all prior versions, of claims in the application.

LISTING OF CLAIMS:

1. (currently amended) An optical measurement apparatus for living body comprising:

a measurement channel including an irradiation use optical fiber which is set at an irradiation position on a body surface in an inspection area of a subject and irradiates an inspection light having a predetermined frequency of from visible to near infrared range and a light receiving use optical fiber which is set at a light receiving portion adjacent the irradiation use optical fiber on the body surface in the inspection area and receives the inspection light irradiated from the adjacent irradiation use optical fiber and penetrated through inside the subject;

a light detection unit which detects the amount of inspection light received by the light receiving use optical fiber in an electrical signal; and

a signal calculation and processing unit including a hemoglobin signal calculating unit which calculates a hemoglobin signal representing a hemoglobin concentration inside the subject through which the inspection light has penetrated based on the electrical signal detected by the light detection unit and an optical fiber setting adequacy evaluation unit which evaluates adequacy of setting on the body surface in the inspection area of the irradiation use optical fiber or the light receiving use optical fiber both of which constitute the measurement channel,

~~characterized in that~~wherein:

the signal calculation and processing unit further includes a pulse wave calculation unit which calculates an intensity of a pulse wave component due to

heartbeats of the subject contained in the hemoglobin signal calculated by the hemoglobin signal calculation unit, ~~and~~

the optical fiber setting adequacy evaluation unit evaluates adequacy of setting on the body surface of the subject of the irradiation use optical fiber or the light receiving use optical fiber based on the intensity of the pulse wave component calculated by the pulse wave calculation unit, and

the intensity of the pulse wave component calculated by the pulse wave calculation unit is an intensity at the center frequency among the pulse wave component.

2. (original) An optical measurement apparatus for living body according to claim 1, characterized in that a plurality of the measurement channels are included and are constituted by a plurality of the irradiation use optical fibers and a plurality of the light receiving use optical fibers.

3. (Cancelled).

4. (currently amended) An optical measurement apparatus for living body ~~according to claim 1 or 2, characterized in that~~ comprising:

a measurement channel including an irradiation use optical fiber which is set at an irradiation position on a body surface in an inspection area of a subject and irradiates an inspection light having a predetermined frequency of from visible to near infrared range and a light receiving use optical fiber which is set at a light receiving portion adjacent the irradiation use optical fiber on the body surface in the

inspection area and receives the inspection light irradiated from the adjacent irradiation use optical fiber and penetrated through inside the subject;

a light detection unit which detects the amount of inspection light received by the light receiving use optical fiber in an electrical signal; and

a signal calculation and processing unit including a hemoglobin signal calculating unit which calculates a hemoglobin signal representing a hemoglobin concentration inside the subject through which the inspection light has penetrated based on the electrical signal detected by the light detection unit and an optical fiber setting adequacy evaluation unit which evaluates adequacy of setting on the body surface in the inspection area of the irradiation use optical fiber or the light receiving use optical fiber both of which constitute the measurement channel,

wherein:

the signal calculation and processing unit further includes a pulse wave calculation unit which calculates an intensity of a pulse wave component due to heartbeats of the subject contained in the hemoglobin signal calculated by the hemoglobin signal calculation unit,

the optical fiber setting adequacy evaluation unit evaluates adequacy of setting on the body surface of the subject of the irradiation use optical fiber or the light receiving use optical fiber based on the intensity of the pulse wave component calculated by the pulse wave calculation unit,

the intensity of the pulse wave component calculated by the pulse wave calculation unit is fourth order statistics around the center frequency among the pulse wave component.

5. (Previously Presented) An optical measurement apparatus for living body according to claim 1 or 2, characterized in that the pulse wave calculation unit is provided with means for applying a band pass filter to the hemoglobin signal calculated by the hemoglobin signal calculation unit and means for performing frequency analysis on the data applied of the band pass filter, and the intensity of the pulse wave component is calculated based on the data performed of the frequency analysis.

6. (original) An optical measurement apparatus for living body according to claim 5, characterized in that the band pass filter is a high frequency band pass filter, a low frequency band pass filter or a combination thereof.

7. (Previously Presented) An optical measurement apparatus for living body according to claim 5, characterized in that further comprises means for inputting a band threshold value for the band pass filter by an operator.

8. (Previously Presented) An optical measurement apparatus for living body according to claim 1 or 2, characterized in that the optical fiber setting adequacy evaluation unit evaluates the setting adequacy of the irradiation use optical fiber and/or the light receiving use optical fiber on the body surface of the subject based on whether the intensity of the pulse wave component calculated is larger than or smaller than the predetermined threshold value.

9. (original) An optical measurement apparatus for living body according to claim 8, characterized in that further comprises means for inputting the predetermined threshold value for the intensity of the pulse wave component by an operator.

10. (Previously Presented) An optical measurement apparatus for living body according to claim 1 or 2, characterized in that the calculation of the intensity of the pulse wave component by the pulse wave calculation unit and the evaluation of the setting adequacy of the irradiation use optical fibers and/or the light receiving use optical fibers for the respective measurement channels based on the calculation by the optical fiber setting adequacy evaluation unit are performed during a preparatory measurement prior to an actual optical measurement for the living body and a resetting is performed for an irradiation use optical fiber and/or a light receiving use optical fiber of a measurement channel of which setting is evaluated inadequate by the optical fiber setting adequacy evaluation unit.

11. (Previously Presented) An optical measurement apparatus for living body according to claim 1 or 2, characterized in that further comprises means for rejecting after the actual measurement a hemoglobin signal for obtaining living body information inside the living body of a measurement channel for which resetting of the irradiation use optical fiber or light receiving use optical fiber on the body surface has been performed is evaluated inadequate regardless to the performance of the resetting of the irradiation use optical fiber or light receiving use optical fiber.

12. (Previously Presented) An optical measurement apparatus for living body according to claim 1 or 2, characterized in that the evaluation of the setting adequacy

of the irradiation use optical fiber or the light receiving use optical fiber on the body surface is performed after completing the actual optical measurement for living body which is for obtaining the living body information inside the living body of the subject, and further comprises means for rejecting a hemoglobin signal for obtaining the living body information inside the living body for a measurement channel of which setting is evaluated inadequate by the optical fiber setting adequacy evaluation unit.

13. (Currently Amended) A method of optical measurement for living body comprising:

(1) step of irradiating inspection light having a predetermined wavelength of from visible to near infrared range with an irradiation use optical fiber set at an irradiation position on a body surface in an inspection area of a ~~subject,~~subject;

(2) step of receiving the inspection light which is irradiated from the adjacent irradiation use optical fiber and penetrated through inside the subject with a light receiving use optical fiber at a light receiving position adjacent the irradiation use optical fiber on the body surface in the inspection ~~area,~~area;

(3) step of detecting the amount of the inspection light received by the light receiving use optical fiber in a form of electrical ~~signal,~~signal;

(4) step of calculating a hemoglobin signal representing hemoglobin concentration inside the subject through which the inspection light has penetrated based on the detected electrical ~~signal,~~signal; and

(5) step of evaluating setting adequacy on the body surface in the inspection area of the irradiation use optical fiber or the light receiving use optical fiber, ~~characterized in that~~

wherein the step (5) includes:

_____(6) step of calculating an intensity of a pulse wave component due to heartbeats of the subject contained in the hemoglobin signal calculated in the step ~~(4) and~~(4), and

(7) step of evaluating a setting adequacy on the body surface of the subject of the irradiation use optical fiber or the light receiving use optical fiber based on the intensity of the pulse wave component calculated in the step (6), and

wherein the intensity of the pulse wave component calculated in the step (6) is an intensity at the center frequency among the pulse wave component.

14. (original) A method of optical measurement for living body according to claim 13 characterized in that the setting adequacy evaluation on the body surface of the irradiation use optical fiber or the light receiving use optical fiber are performed during a preparatory measurement prior to an actual optical measurement for living body which is for obtaining the living body information inside the living body of the subject and a resetting is performed for an irradiation use optical fiber and/or a light receiving use optical fiber of a measurement channel of which setting is evaluated inadequate by the optical fiber setting adequacy evaluation step.

15. (Previously Presented) A method of optical measurement for living body according to claim 14, characterized in that further comprises step of rejecting after the actual measurement a hemoglobin signal for obtaining living body information inside the living body of a measurement channel for which the resetting of the irradiation use optical fiber or light receiving use optical fiber on the body surface has been performed is evaluated inadequate regardless to the performance of the resetting of the irradiation use optical fiber and/or light receiving use optical fiber.

16. (Previously Presented) A method of optical measurement for living body according to claim 13, characterized in that the evaluation of the setting adequacy of the irradiation use optical fiber or the light receiving use optical fiber on the body surface is performed after completing the actual optical measurement for living body which is for obtaining the living body information inside the living body of the subject, and further comprises step of rejecting a hemoglobin signal for obtaining the living body information inside the living body for a measurement channel of which setting is evaluated inadequate by the optical fiber setting adequacy evaluation step.